

## DISPOSABLE OUTERWEAR

### CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

[0001] This patent application claims the benefit of U.S. Provisional Patent Application No. 60/460,912, filed April 7, 2003.

### FIELD OF THE INVENTION

[0002] This invention pertains generally to articles of clothing, and more particularly to disposable clothing for outdoor athletic activities.

### BACKGROUND OF THE INVENTION

[0003] Individuals participating in extended-length endurance athletic activities, (e.g., marathon, half marathon, triathlon, cross-country skiing, mountaineering, etc.) typically begin the activity wearing multiple layers of clothing in order to be prepared for changing weather conditions. For example, a marathon always begins in the morning, often quite early, when the temperature is relatively cool. Because the marathon is run over an extended period of time, the temperature often becomes warmer, as does the runner from the exertion of the run. A marathon runner typically wears several layers of clothing, each layer designed to protect the runner from one or more ambient conditions, such as cold, wind, and rain. Additionally, the layers should work together to keep the runner comfortable by wicking away perspiration, and maintaining the runner's body temperature at a comfortable level (e.g., early in the morning when the air temperature is cool and the participant is waiting for the race to begin). Such layers of clothing often range from disposable plastic bags to sweatshirts and sweatpants. The bags, however, have no sleeves, are not very comfortable because they billow as they are not designed to be used as clothing, and do not allow perspiration to escape. Sweatshirts and sweatpants do not protect against rain or wind. If they get wet, they tend to make the wearer colder, rather than warmer, and add unwanted weight due to absorbed perspiration and precipitation.

[0004] "Technical" outerwear made of GORE-TEX or other synthetic fabric with similar properties is a well known alternative to the aforementioned layering concept. While popular for recreational running, the use of technical outerwear in marathons is disadvantageous. As a marathon progresses, the clothing needs of the marathon runner may

change with changing weather conditions and body temperature. Often, the marathon runner becomes warmer as the race progresses, and removes one or more layers of clothing. The removed item is typically discarded, however, since technical outerwear is relatively expensive (a jacket and pants together may cost as much as \$500), a marathon runner may wish to retain removed technical outerwear on account of its cost, and may carry or otherwise affix the item to themselves, thereby creating an undesirable encumbrance or otherwise restricting the runner's mobility for the remaining duration of the marathon. This is why marathon runners often select inexpensive disposable layers including old sweatshirts and plastic bags.

[0005] In view of the foregoing, there is need for low-cost disposable outerwear that has properties similar to that of more expensive technical outerwear. Additionally, it would be advantageous if the outerwear were easily removable, lightweight and compactible into a small space for storage. Preferably, the outerwear should provide participants of extended-length endurance athletic activities an affordable lightweight garment that addresses a variety of weather conditions as well as accommodating personal preferences of use (e.g., disposable or reusable). Additionally, the outerwear may provide participants with the ability to customize the garment mid-activity without stopping, thereby alleviating concerns the participants may have in selecting appropriate garments given changing and unforeseen or unknown weather conditions.

#### BRIEF SUMMARY OF THE INVENTION

[0006] In one aspect, the invention provides disposable outerwear that substantially protects the wearer from the elements during athletic activities and is sufficiently inexpensive to be considered expendable or disposable. The outerwear may include a first portion embodying a jacket and a second portion embodying pants. Each of the first and second portions may include zippers, snaps, buttons, velcro or the like, perforations, and elastic members for providing a snug fit against the wearer. The outerwear is lightweight, non-restricting, wind resistant, water repellant yet breathable, and provides sufficient protection so as to obviate a need for extra layers.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0007]** FIG.1 shows a front view of the inventive outerwear embodied as a jacket and pants.

**[0008]** FIG. 2 shows an enlarged front view of the jacket of FIG. 1.

**[0009]** FIG. 3 shows an enlarged view of the pants of FIG. 1.

### DETAILED DESCRIPTION OF THE EMBODIMENTS

**[0010]** Referring to FIG. 1, disposable outerwear 10 is shown, including jacket 14 and pants 18. Disposable outerwear 10 provides warmth, wind resistance, water repellency, low weight and breathability, among other things.

**[0011]** In one exemplary embodiment, jacket 14 and pants 18 are preferred to be made from a material including fine, continuous fibers of 100% high-density polyethylene that are randomly distributed and nondirectional. The material may be, for example, Tyvek® spunbonded olefin manufactured by E.I. du Pont de Nemours and Company. However, the material is not to be restricted to Tyvek®, and other materials that possess the same or similar features and/or benefits of Tyvek® may also be used to make jacket 14 and pants 18.

**[0012]** The material may be virgin or recycled. However, jacket 14 and pants 18 are generally made with a single layer of recycled Tyvek® material to reduce the materials cost, and because only a single layer is typically required to provide the above-mentioned features and/or benefits in many applications.

**[0013]** Referring now to FIG. 2, jacket 14 is sized and shaped to cover a wearer's upper body, and includes sleeves 30, cuffs 34, collar 22, waist 42 and closure device 26 for fastening opposite sides of the jacket 14. As shown, the closure device 26 takes the form of a zipper, however, other closure devices, such as buttons, snaps or Velcro, may be used. Zipper 26 is secured to opposite sides of the jacket 14 by sewing, glueing, welding, or other suitable method. However, when manufacturing jackets and pants from recycled Tyvek®, which is often in the form of used and discarded lab coats, there are often unwanted materials, such as buttons or snaps, or blemishes that must be removed. These unwanted

portions of material are cut away using a serging machine, which simultaneously cuts and sews material. The serging process is an unusual way to sew in a zipper and is not customarily used for this purpose. Therefore, a customized sewing foot was developed to accommodate the simultaneous cutting of unwanted fabric and the sewing in of the zipper 26. The foot is used to guide the material past the cutting blade and sewing needle and made to fit according to the specific size of the zipper 26.

[0014] Elastic waistline 42 is formed by stitching a conventional elastic member such as a rope, ribbon, or band along the bottom of jacket 14. Elastic waistline 42 provides a taper to jacket 14 and a snug yet comfortable fit against the waist of an individual wearing jacket 14. In addition to providing a more stylish or esthetically pleasing appearance, the elastic waistline 42 snugly seals the bottom of jacket 14 against the individual, thereby minimizing billowing and unwanted airflow through the jacket 14. The jacket 14 includes sleeves 30 having elastic wrist cuffs 34 at ends of sleeves 30. Elastic wrist cuffs 34 are formed by stitching a conventional elastic member such as a rope, ribbon, or band along the ends of sleeves 30. Elastic wrist cuffs 34 provide a taper to sleeves 30 and a snug yet comfortable fit against the wrists of an individual wearing jacket 14. Elastic wrist cuffs 34 also help prevent unwanted airflow through jacket 14 by sealing the open ends of sleeves 30 against the individual's wrists. Further, elastic wrist cuffs 34 help prevent unwanted moisture from entering jacket 14 through sleeves 30.

[0015] The elastic member of the waistline 42 may, in some constructions, have a different size, shape or elasticity than the elastic member of wrist cuffs 34 to provide a different fit at the waist as compared to the wrists. For example, wrist cuffs 34 may be less elastic than waistline 42 to provide a more comfortable and less restrictive feel to jacket 14. Alternatively, one or more of the foregoing elastic members may be omitted to provide a desired fit and price. For example, an individual may prefer to tuck the jacket into the pants. In this example, the elastic member of the waistline 42 is not necessary and may be omitted altogether, thereby reducing the cost of the outerwear 10.

[0016] As shown in FIG. 3, pants 18, include a groin portion 50 and pair of leg portions 54 extending from the groin portion 50. The groin portion 50 is secured to an individual's waist by elastic waistline 58. Elastic waistline 58 is formed by affixing a conventional

elastic member such as a rope, ribbon, or band along the open end of groin portion 50.

Elastic waistline 58 provides a taper to the groin portion 50 and a snug yet comfortable fit against the waist of an individual wearing pants 18. Elastic waistline 58 also helps prevent unwanted airflow through pants 18 by sealing the open end of groin portion 50 against the individual's waist. Further, elastic waistline 58 helps prevent unwanted moisture such as precipitation from entering pants 18 through the groin portion 50. The pants 18 may also include elastic ankle cuffs 66 formed in the bottom of leg portions 54. Elastic ankle cuffs 66 are formed by stitching conventional elastic members such as ropes, ribbons, or bands along the open ends of leg portions 54. Elastic ankle cuffs 66 provide a taper to leg portions 54 and a snug yet comfortable fit against the ankles of an individual wearing pants 18. Elastic ankle cuffs 66 also help prevent unwanted airflow through pants 18 by sealing the open ends of leg portions 54 against the individual's ankles. Further, elastic ankle cuffs 66 help prevent unwanted moisture from entering pants 18 through leg portions 54.

**[0017]** The elastic member of the waistline 58 may, in some constructions, be a different size, shape or elasticity than the elastic member of the ankle cuffs 66 to provide a different fit at the waist as compared to the ankles. For example, ankle cuffs 66 may be less elastic than waistline 58 to provide a more comfortable feel to pants 18, or waistline 58 may be more elastic to prevent pants 18 from falling down during rigorous activity by an individual wearing pants 18. The elastic ankle cuffs 66 may be omitted because some individuals prefer to have unrestrictive, open cuffs. Furthermore, open cuffs advantageously allow a wearer to more easily remove the pants when wearing shoes. In addition, when the elastic ankle cuffs 66 are omitted, the leg portions 54 of the pants 18 may include markings disposed on the leg portions 54 to facilitate customization of the length of the leg portions 54 by the wearer. For example, the pants 18 may be produced with relatively long leg portions 54 and sold as "one size fits most", and the markings may indicate typical pant lengths so the wearer may cut, roll, or otherwise shorten the leg portions 54 to achieve a desired fit.

**[0018]** To further facilitate removal of the outerwear 10, the jacket 14 and pants 18 may each include a quick removal means. The quick removal means may be embodied by any one or more of the various aforementioned closure devices 26, or perforations. Since the outerwear 10 is substantially tear resistant, the jacket 14 and pants 18 may be provided with

one or more perforated portions so the wearer may rip or tear away the outerwear 10 for relatively quick and easy removal. This quick and easy removal is especially desirable in the case of pants 18. Removal of pants such as sweatpants and warm-up pants often requires that a runner stop from running, and either remove their shoes, or balance on one foot at a time to pull each leg out of the leg portions 54. Referring to FIG. 3, perforations 80 are provided along the sides of pants 18 to facilitate quick and easy tearaway removal.

[0019] Although the wearer may render the jacket 14 and/or pants 18 not-reusable by ripping, tearing, or otherwise destructively removing the outerwear 10 along perforations 80, the outerwear 10 is replaceable at a relatively low cost. Moreover, the destructively removed outerwear 10 may be discarded, collected or otherwise reclaimed, and recycled into outerwear 10 among other things. Although the perforations 80 are shown along the sides of pants 18, it is contemplated that perforations 80 may be disposed elsewhere on the outerwear 10 to provide the wearer with a means to customize the outerwear 10. For example, one or more perforations 80 may encircle the sleeves 30 so that one or more lengths of the sleeves 30 may be removed to create a variable length short-sleeved or sleeveless jacket 14. Similarly, one or more perforations 80 may encircle the leg portions 54 so that one or more lengths of the leg portions 54 may be removed to create a variable length short-legged pants 18 (e.g., shorts). In addition, venting perforations 80 may be disposed on portions of the outerwear 10 where improved ventilation may be advantageous (e.g., torso, armpits, etc.) If the wearer desires ventilation in any such areas, the corresponding venting perforations 80 may be ripped open. Moreover, perforations 80 may be a suitable substitute for a closure device 26 such as the zipper shown in FIG. 2 to reduce the cost of producing the outerwear 10. Furthermore, an inexpensive closure device 26 (e.g., snaps, Velcro, etc.) may be used in combination with the foregoing perforations 80 to permit reclosure of the outerwear 10 after it is torn apart.

[0020] The illustrated jacket 14 and pants 18 are contemplated for use as a disposable layer of outerwear for an individual participating in an athletic or sporting event or activity. For example, jacket 14 and pants 18 may be worn by an individual participating in an extended-length athletic activity such as a marathon. In other examples, jacket 14 and pants 18 are appropriate for cycling, climbing, hiking, cross-country skiing, sailing, boating and other physical activities. Jacket 14 and pants 18 insulate the individual by keeping body

heat in, while repelling water, deflecting wind, and keeping cold air out. Jacket 14 and pants 18 are lightweight and microporous to allow perspiration from the individual's body to evaporate and escape from jacket 14 and pants 18. Jacket 14 and pants 18 are also tear resistant and puncture resistant. They resist damage from contact with foreign objects that may be encountered during sporting events, such as tree branches, bushes, or the like.

[0021] Although jacket 14 and pants 18 offer some of the features and/or benefits found on more expensive, high-performance "technical" outerwear, jacket 14 and pants 18 are generally lighter weight than technical outerwear, and may be manufactured at a substantially reduced cost, especially when recycled material is used. As a result, jacket 14 and pants 18 may be sold at a price that permits them to be considered for one-time, disposable or expendable use. A runner in a marathon may purchase jacket 14 and pants 18 for one-time use during the marathon and discard select parts or all of jacket 14 and pants 18 during the marathon whenever the runner's comfort needs change. Although sufficiently inexpensive to be disposable, jacket 14 and pants 18 are durable enough to be washed and worn repeatedly, rather than disposing them after one-time use. Discarded jackets 14 and pants 18 may thus be collected by the event organizers or others, and thereafter sent to the manufacturer to be redeemed for a salvage value and recycled for future use.

[0022] Due to the low price, many participants may choose to discard the jacket 14 and/or pant 18 relatively soon after the beginning of the event. However, the breathability and extremely low weight provide the participants with the options of wearing jacket 14 and/or pants 18 for longer periods of time, tying the jacket 14 and/or pants 18 around the participant's waist, or otherwise carrying them along for the remaining duration of the event without substantially encumbering performance. In addition, the jacket 14 and pants 18 may each be compacted to a relatively small size. For example, the jacket 14 may be folded, rolled, or otherwise compacted upon itself and "balled up" within one of the sleeves 30, similar to balling up a pair of socks. The additional advantage of compactibility provides a participant with the option of placing the outerwear 10 in a fanny pack or an included pouch, thereby making them available for future use, such as at the end of a race or other future events. The pouch (not shown) may include a zipper, fold-over flap, or the like to retain the outerwear 10 therein, and additionally, the pouch may advantageously include a lanyard, loop, hook, or the like to attach the pouch to the participant. For example, upon

completion of an event, runners may become chilled and stiffen up when they are warming down and are no longer generating superfluous body heat. The compacted outerwear may be uncompacted from a fanny pack or pouch and worn to retain body heat. In another example, the outerwear 10 may be distributed to participants upon completing an event.

**[0023]** During the event, a plurality of drop-off recycling containers may be disposed along the route to permit participants to discard parts or all of jacket 14 and pants 18 directly into the recycling containers rather than discarding them on the ground for event organizers or others to clean up afterwards. The outerwear 10 may be collected and recycled for reuse as disposable outerwear, among other things. In this way, the outerwear 10 may reduce event clean up costs and additionally may be kept out of the solid waste stream.

**[0024]** The protective outerwear of the present invention may be manufactured for and marked with a logo, design, or other indicia relative to a particular sporting or promotional event, such as, for example, a marathon, half marathon, cycling event, or golf outing. It is known that event sponsors generally enjoy a positive effect on their images in the view of the event participants and a greater degree of loyalty. Further, sponsors may enjoy increased sales of the sponsors' products and services on account of their association with the event. To that end, jacket 14 and pants 18 may include artwork and/or company logos (e.g., event sponsor logos), or other indicia to serve as a promotional, marketing, or advertising medium. Moreover, the aforementioned outerwear storage pouch may also be similarly or otherwise marked.

**[0025]** Preferred embodiments of this invention are described herein. Variations of those preferred embodiments may become apparent to those of ordinary skill in the art upon reading the foregoing description. The inventors expect skilled artisans to employ such variations as appropriate, and the inventors intend for the invention to be practiced otherwise than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations thereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.